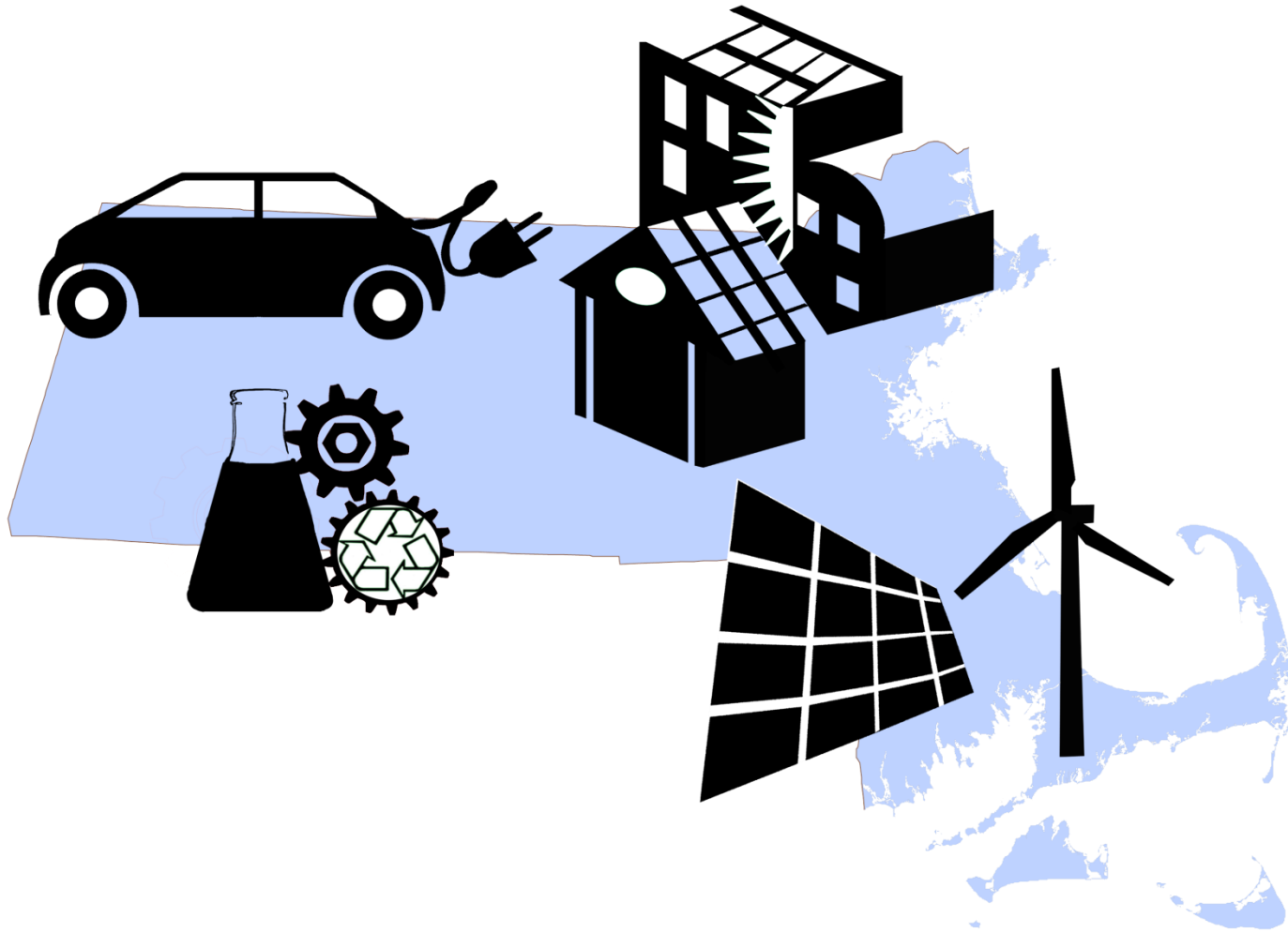


# ***Massachusetts Clean Energy and Climate Plan for 2020***



*Executive Office of Energy and Environmental Affairs*



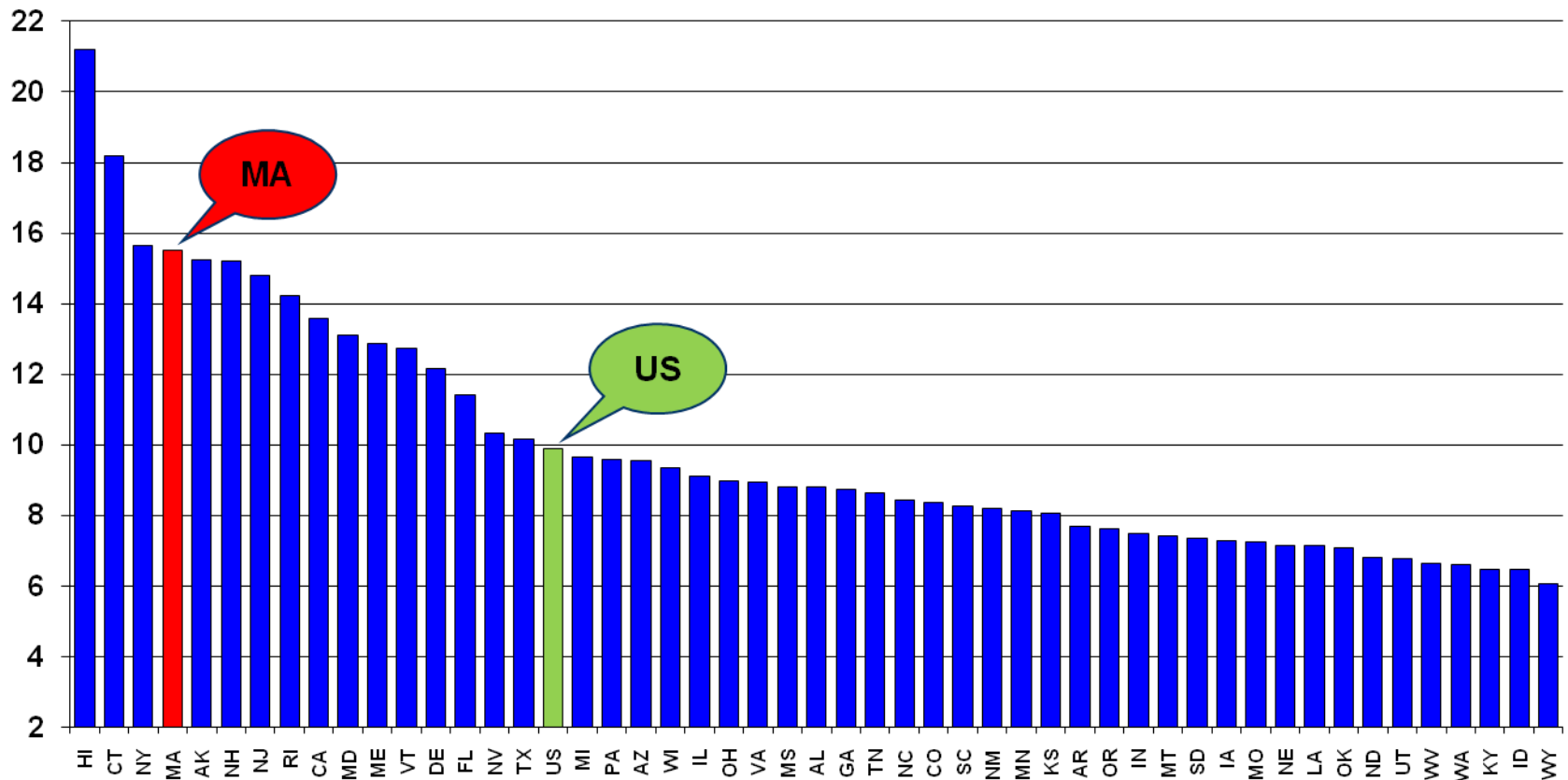
# Massachusetts Clean Energy and Climate Plan for 2020

- I. The Rationale: Launching the Clean Energy Revolution
- II. An Integrated Portfolio of Policies
- III. Implementing the Global Warming Solutions Act
- IV. Beyond 2020: The Road to 80% Lower Emissions in 2050



# MA has High Electricity Prices ...

2009 Average Retail Electric Price  
(Cents per kWh)



Source: EIA Form 826

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# Energy Price Increases



IF YOU THINK THESE GAS PRICES ARE STEEP

Regular	Plus	V-Power <sup>®</sup>
339 <sup>9</sup> / <sub>10</sub>	349 <sup>9</sup> / <sub>10</sub>	361 <sup>9</sup> / <sub>10</sub>
Taxes Included	Taxes Included	Taxes Included

**TRY \$5!**

ENERGY EXPERTS: HUGE SPIKE AT PUMP POSSIBLE      WITHIN WEEKS: PAGE 5

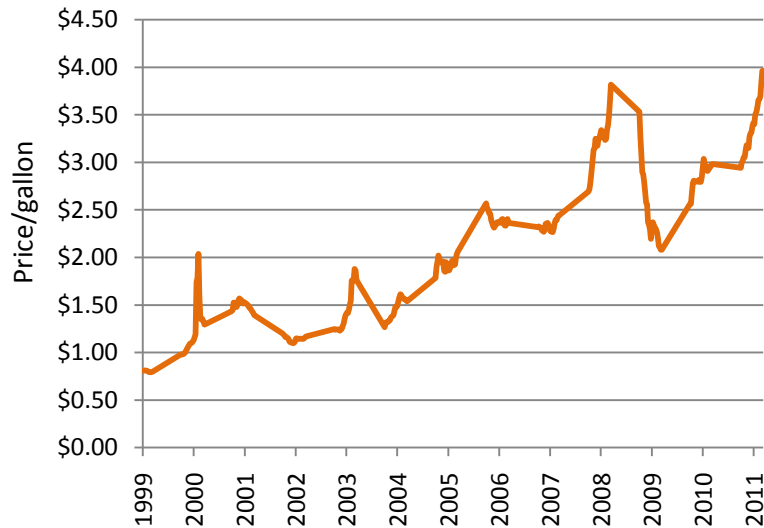


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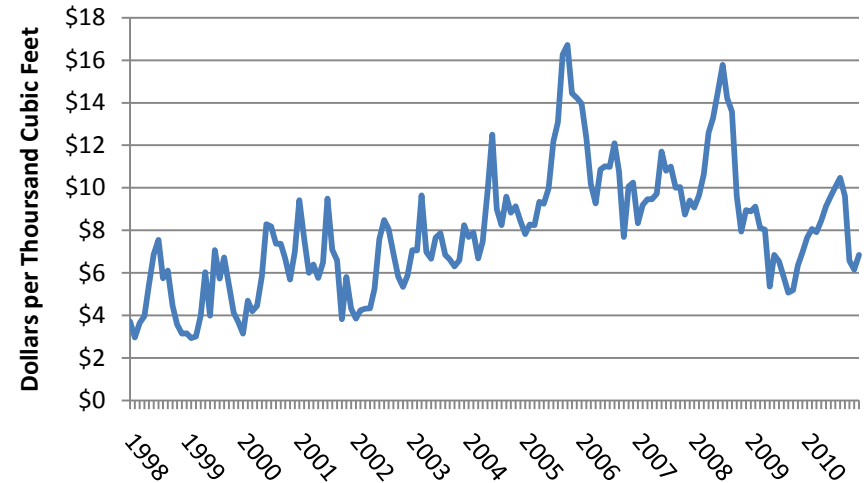


# Energy Price Volatility

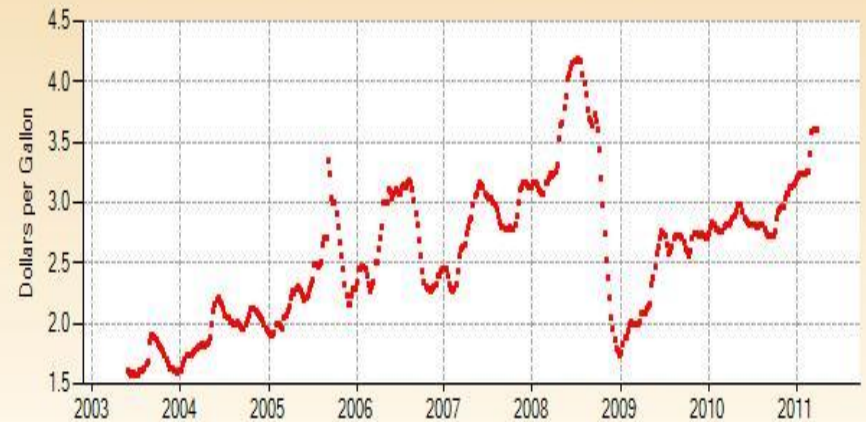
**MA Heating Oil Prices, 1999-2011**



**MA Natural Gas Prices**



**Weekly Massachusetts Midgrade All Formulations Retail Gasoline Prices**



Source: U.S. Energy Information Administration



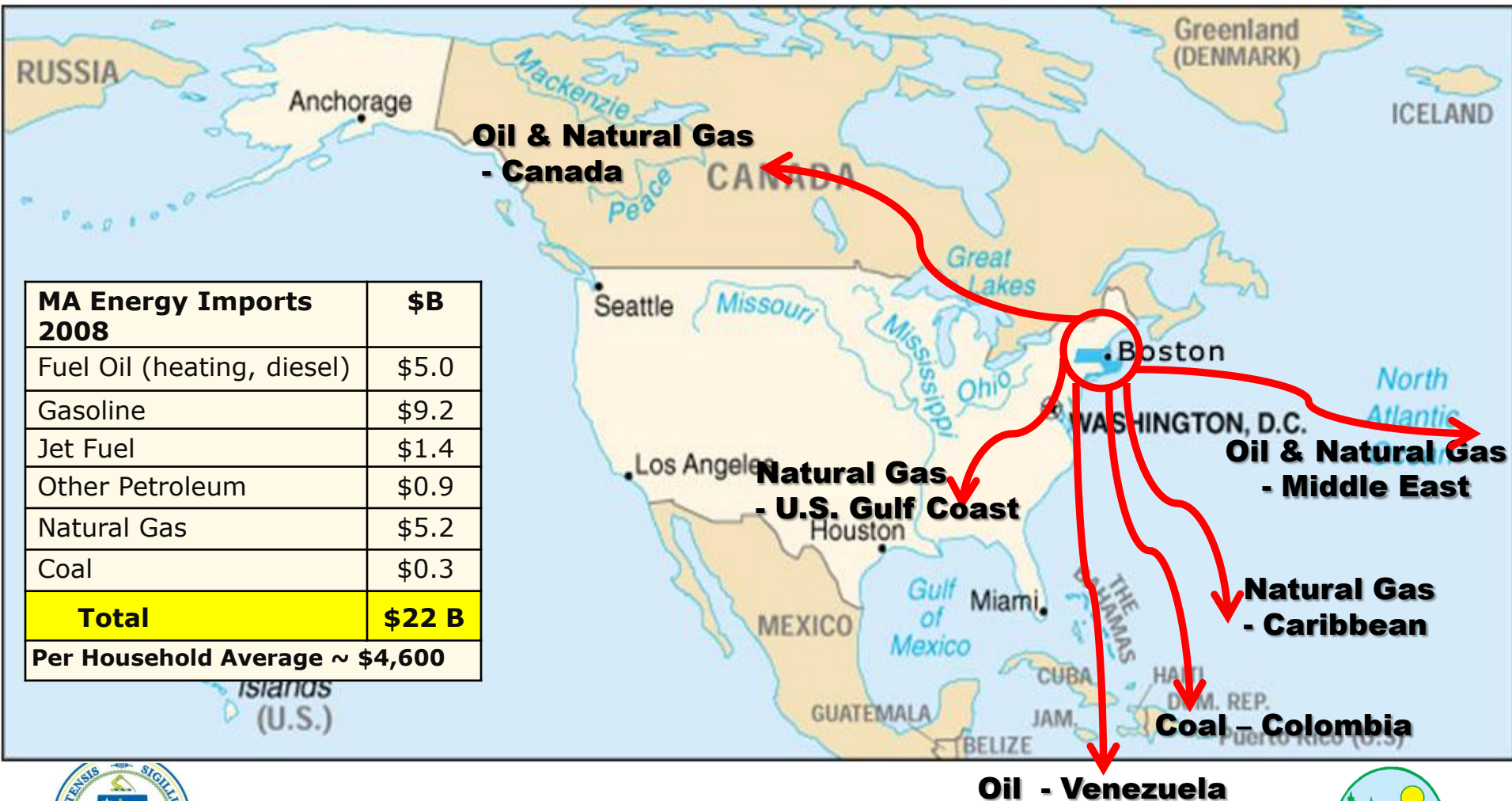
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# Energy Dollars Flowing Out of MA

We spend **\$22B** per year on energy; 80% leaves MA -- **\$18B**)

MA Energy Imports 2008	\$B
Fuel Oil (heating, diesel)	\$5.0
Gasoline	\$9.2
Jet Fuel	\$1.4
Other Petroleum	\$0.9
Natural Gas	\$5.2
Coal	\$0.3
<b>Total</b>	<b>\$22 B</b>
Per Household Average ~ \$4,600	





# Energy Efficiency

- Most ambitious EE program in the country;
  - 3 X California/capita;
- Doubling of employment in EE services since 2007
- \$2 Billion Investment = \$6 Billion Savings
  - Cheapest “new” source of energy;
- By 2020 – 20% electricity through EE;
- ~5% GHG reductions



# Solar

- 25-fold increase in solar PV – from 3.5 MW to more than 80 MW by end of 2010;
- 4-fold increase in number of firms involved in solar energy installation (50 >> 200);
- Doubling of employment in solar manufacturing and installation between 2007 to 2009.



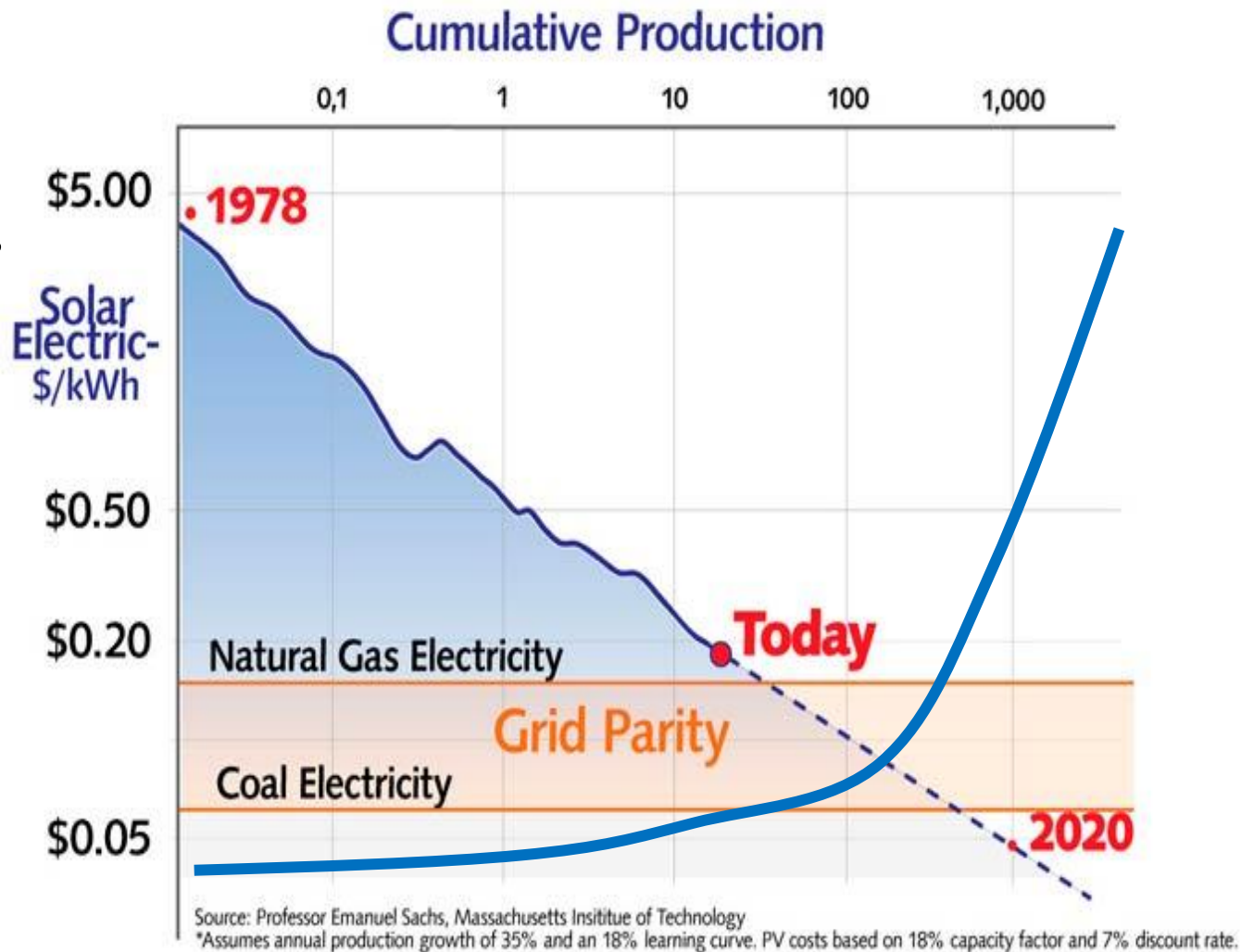


# PV Cost Trend

*"I'd put my money on the sun and solar energy. What a source of power! I hope we don't have to wait until oil and coal run out before we tackle that."*

-- Thomas Edison  
1931

- Over last 30 years PV costs have been reduced by 95%



# Biomass

## Rethinking Biomass Incentives

- Commissioned a study by the Manomet Center for Conservation Sciences, released June 10, 2010;
- New DOER regulations that go beyond what any state and the US EPA is doing;
- MEPA GHG policy; new regulations.



# Wind

- 10-fold increase in wind – from 3.1 MW to more than 30 MW by end of 2010;
- Building the wind cluster:
  - Wind Blade Test Facility;
  - Cape Wind
  - Vestas R&D
  - Siemens Offshore
  - MassTank/EEW
  - New Bedford Port;
  - FloDesign
  - American Superconductor
  - First Wind



New Bedford Marine Commerce Terminal



*“By a range of different measures, Massachusetts stands out as a clean-energy leader among states in the U.S....with strong results to date in leading-edge policies, industry expansion, job creation, and increased investment and deployment.”*

A Future of Innovation and Growth:  
Advancing  
Massachusetts' Clean-Energy Leadership,  
Clean Edge, Inc., April 22, 2010.



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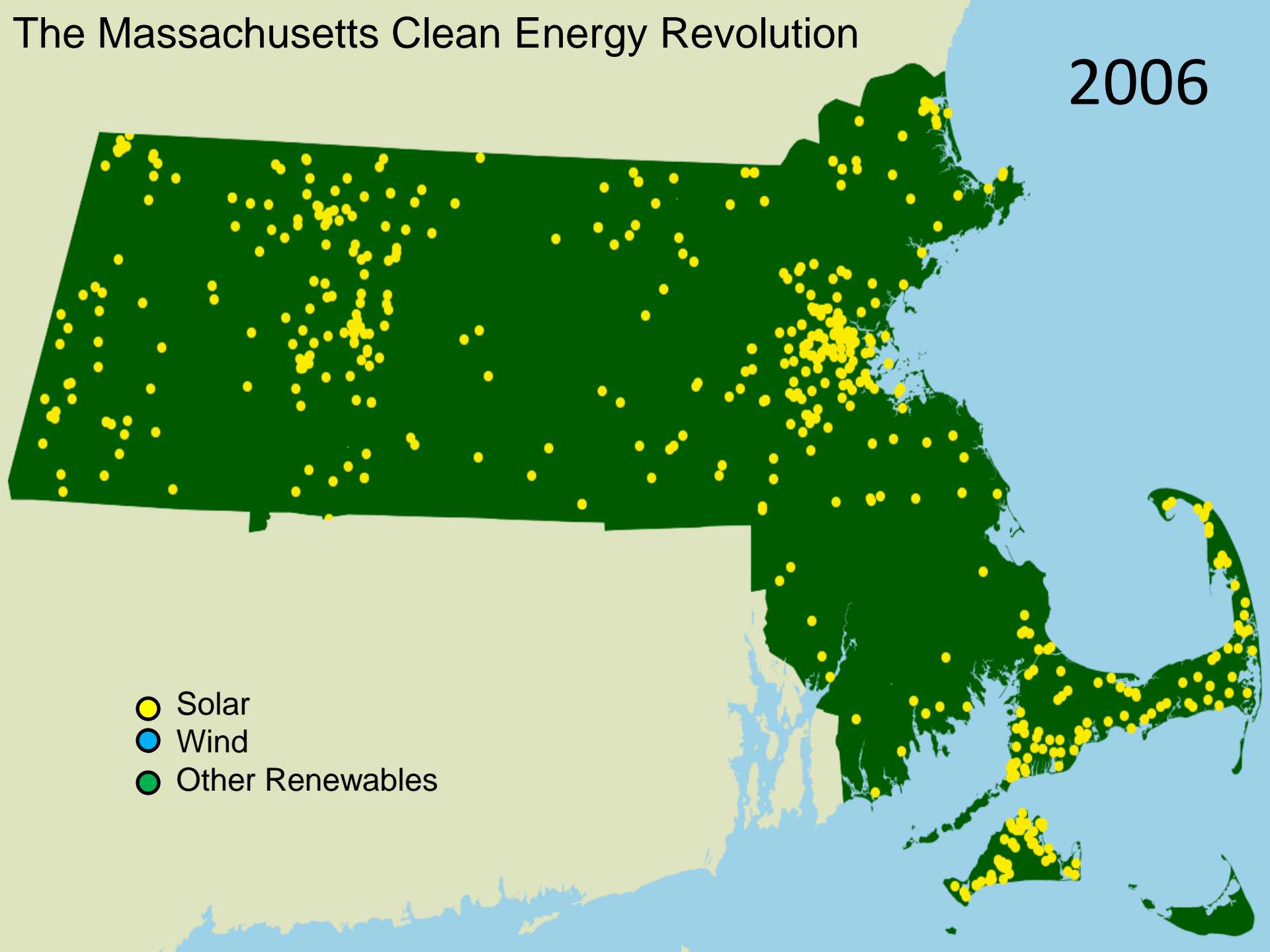


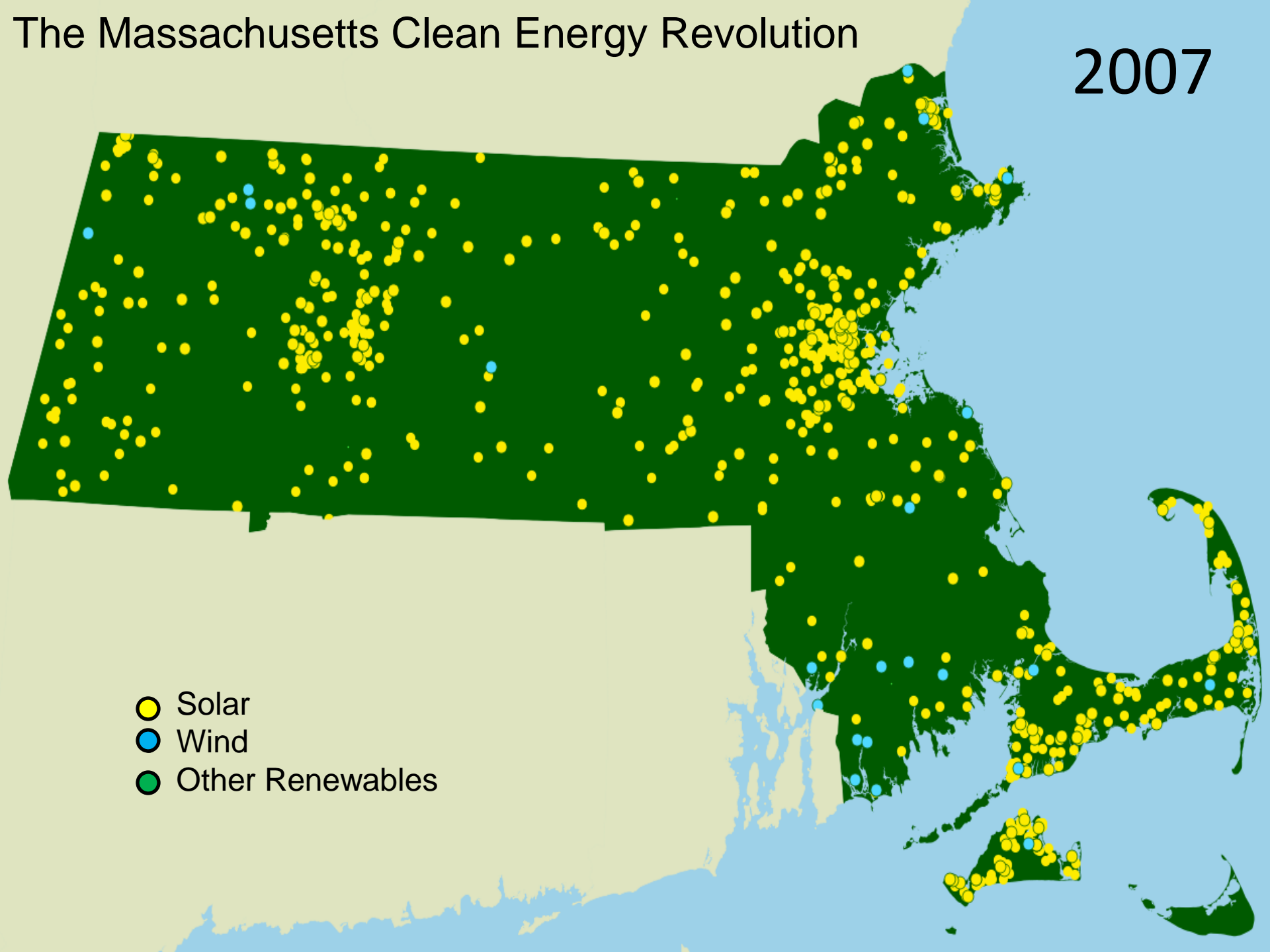
# Economic Opportunity: Energy Cost Savings and Projected Job Growth in 2020

<b>Annual Energy Cost Savings for Residential, Business, Municipal Costumers</b>	
<b>Total</b>	<b>\$6.3B</b>

<b>Job growth potential</b>	
Induced or indirect job growth	39, 000
Clean energy sector job growth	3,000-9,000
<b>Total</b>	<b>42,000-48,000</b>

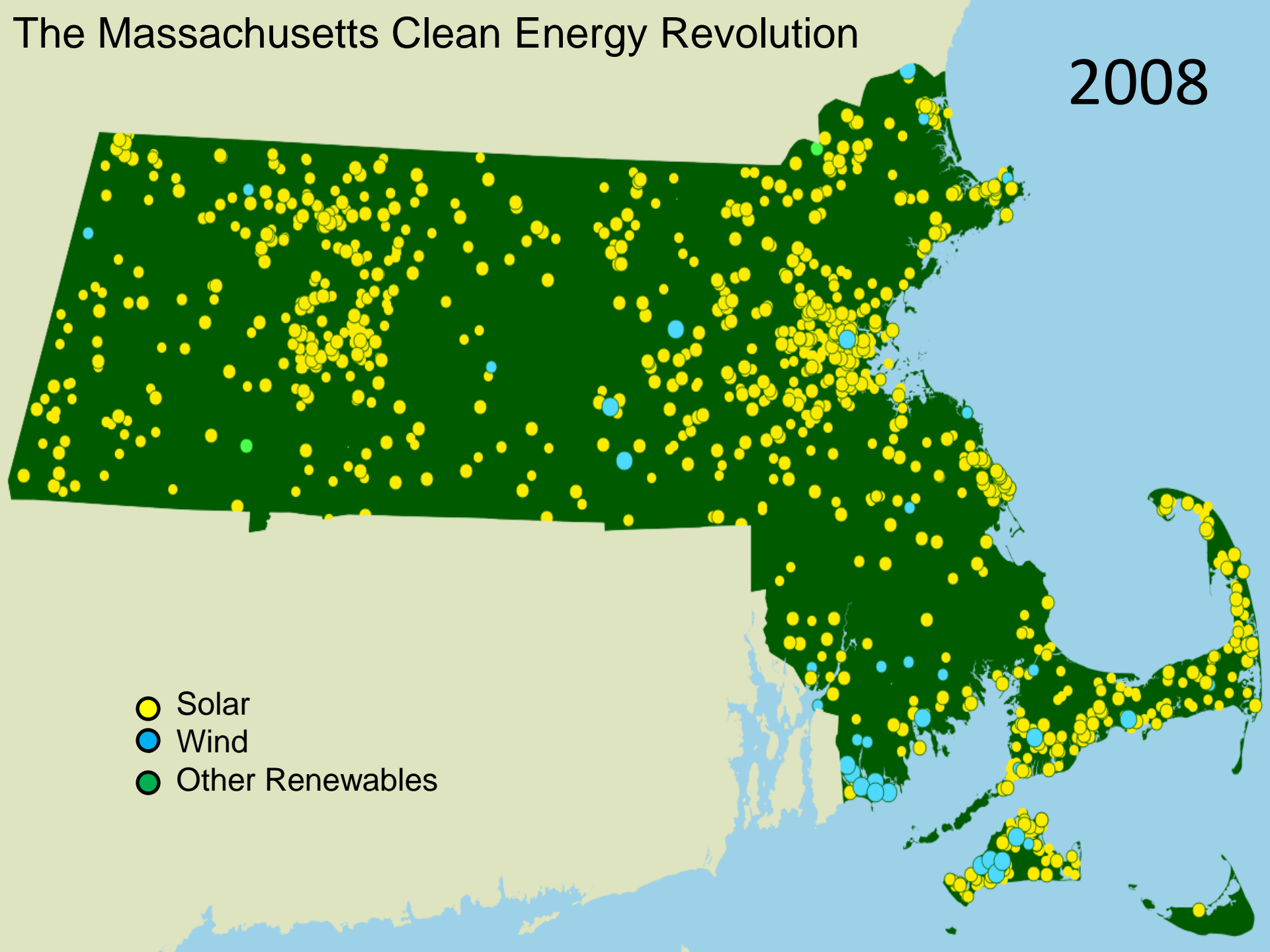






# The Massachusetts Clean Energy Revolution

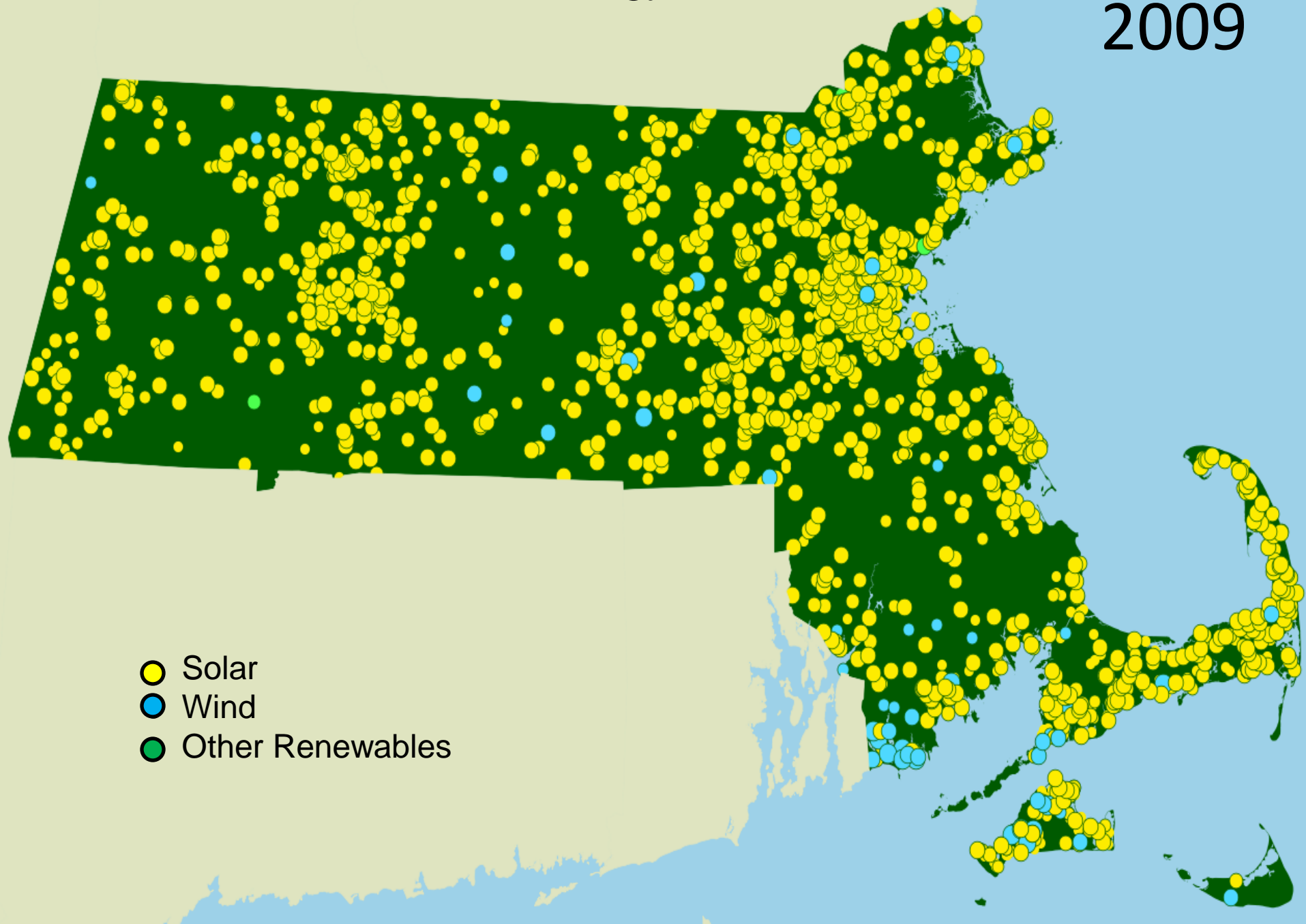
2008





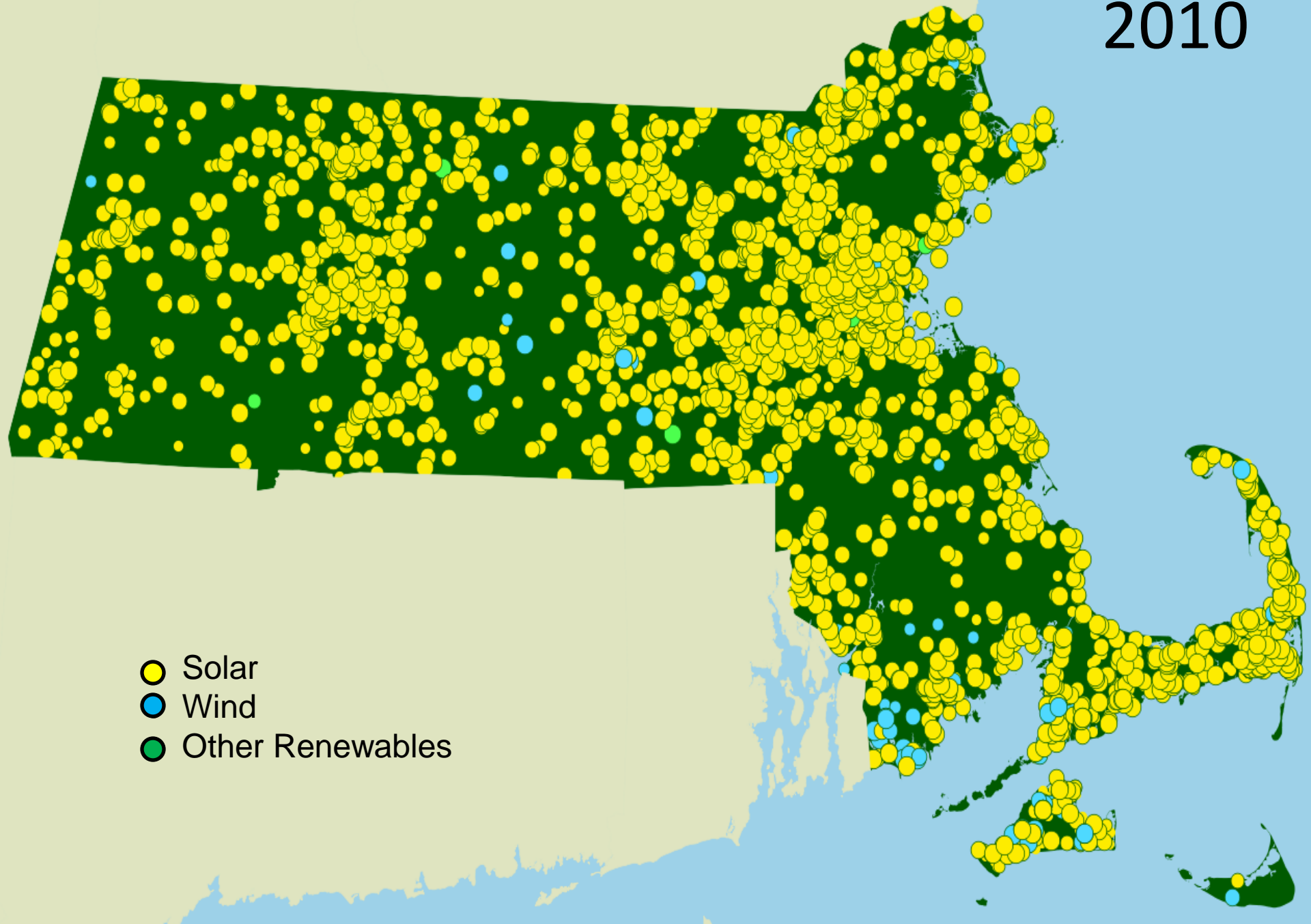
# The Massachusetts Clean Energy Revolution

2009



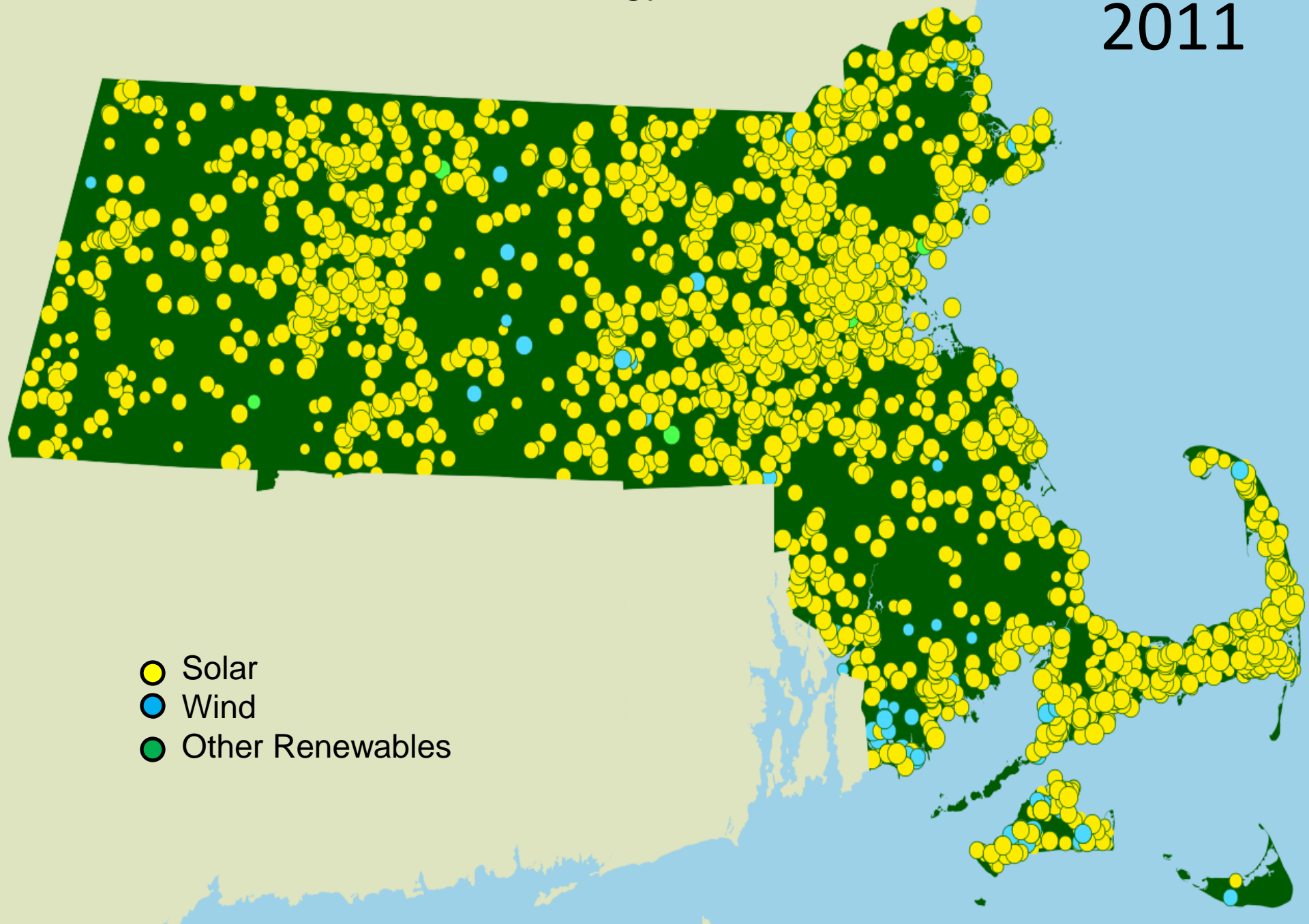
# The Massachusetts Clean Energy Revolution

2010

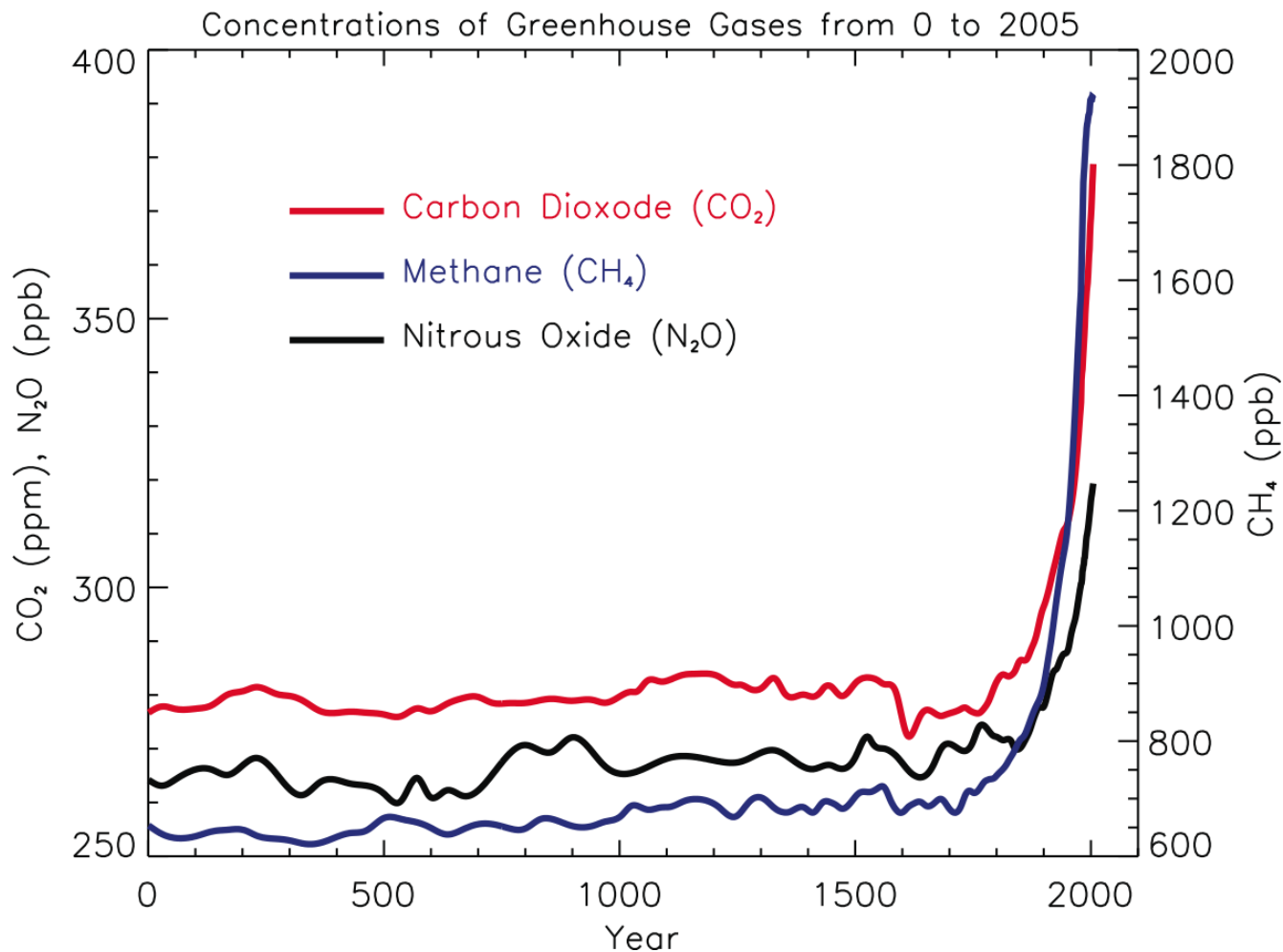


# The Massachusetts Clean Energy Revolution

2011



# Global Increase of GHG Concentrations





# An Integrated Portfolio of Policies



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# An Integrated Portfolio of Policies

Buildings (9.8%)

Energy Supply (7.6%)

Transportation (7.8%)

Non-energy Emissions (2.0%)

Cross-Cutting Policies



# Buildings (9.8%)

All cost-effective energy efficiency/RGGI (7.1%)

Advanced building energy codes (1.6%)

Building energy rating and labeling

“Deep” energy efficiency improvements for buildings (0.2%)

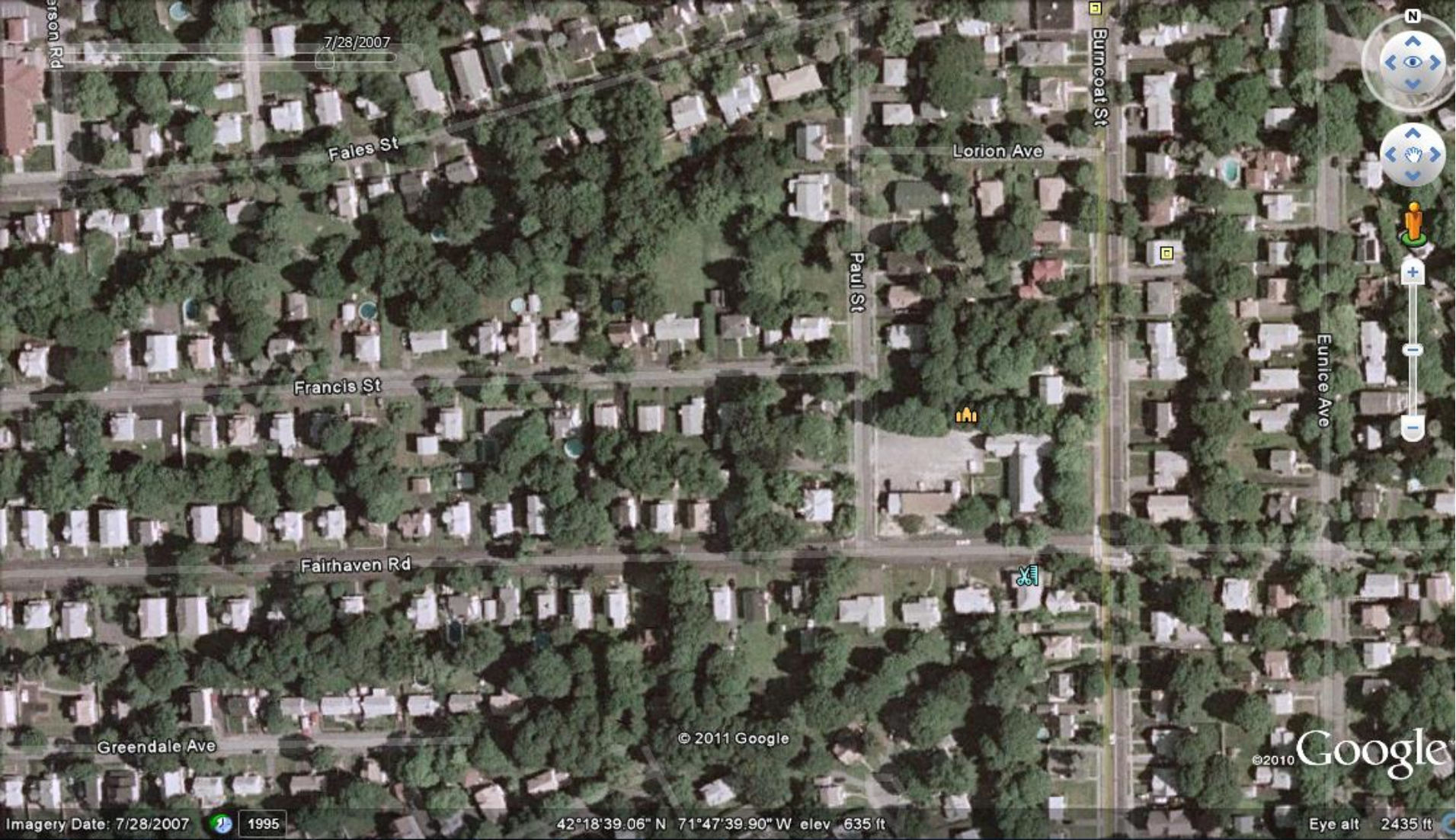
Expanding energy efficiency programs to C/I heating oil (0.1%)

Developing a mature market for solar thermal water/space heating (0.1%)

Tree retention and planting to reduce heating and cooling loads (0.1%)

Federal appliance and product standards (0.6%)

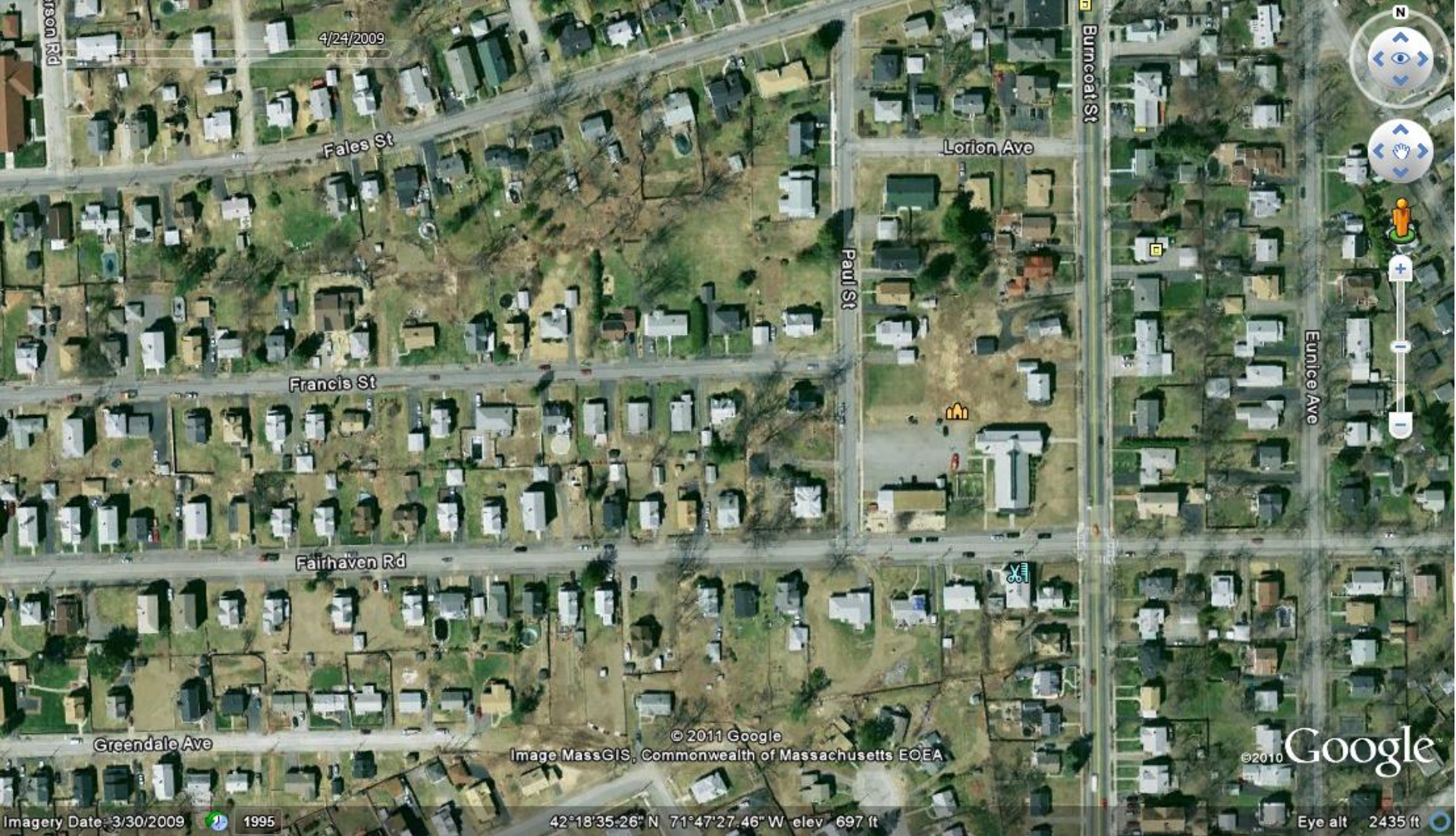




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# Electricity (7.7%)

Renewable Portfolio Standard (1.2%)

More stringent EPA power plant rules (1.2%)

Clean energy imports (5.4%)

Clean energy performance standard (CPS)



# Transportation (7.6%)

Federal and California vehicle efficiency and GHG standards (2.6%)

Federal emissions and fuel efficiency standards for medium and heavy duty vehicles (0.3%)

Federal renewable fuel standard and regional low carbon fuel standard (1.6%)

Clean car consumer incentives (0.5%)

Pay As You Drive (PAYD) auto insurance (pilot program, possible expansion later) (1.1%)

Sustainable Development Principles (0.1%)

GreenDOT (1.2%)

Smart growth policy package (0.4%)





# Non-Energy Emissions (2.0%)

Reducing GHG emissions from motor vehicle air conditioning (0.3%)

Stationary equipment refrigerant management (1.3%)

Reducing SF6 emissions from gas-insulated switchgear (0.2%)

Reducing GHG emissions from plastics (0.3%)



# Cross-cutting Policies

MEPA GHG policy and protocol

Leading by Example

Green Communities Division

Consideration of GHG emissions in State permitting, licensing  
and administrative approvals

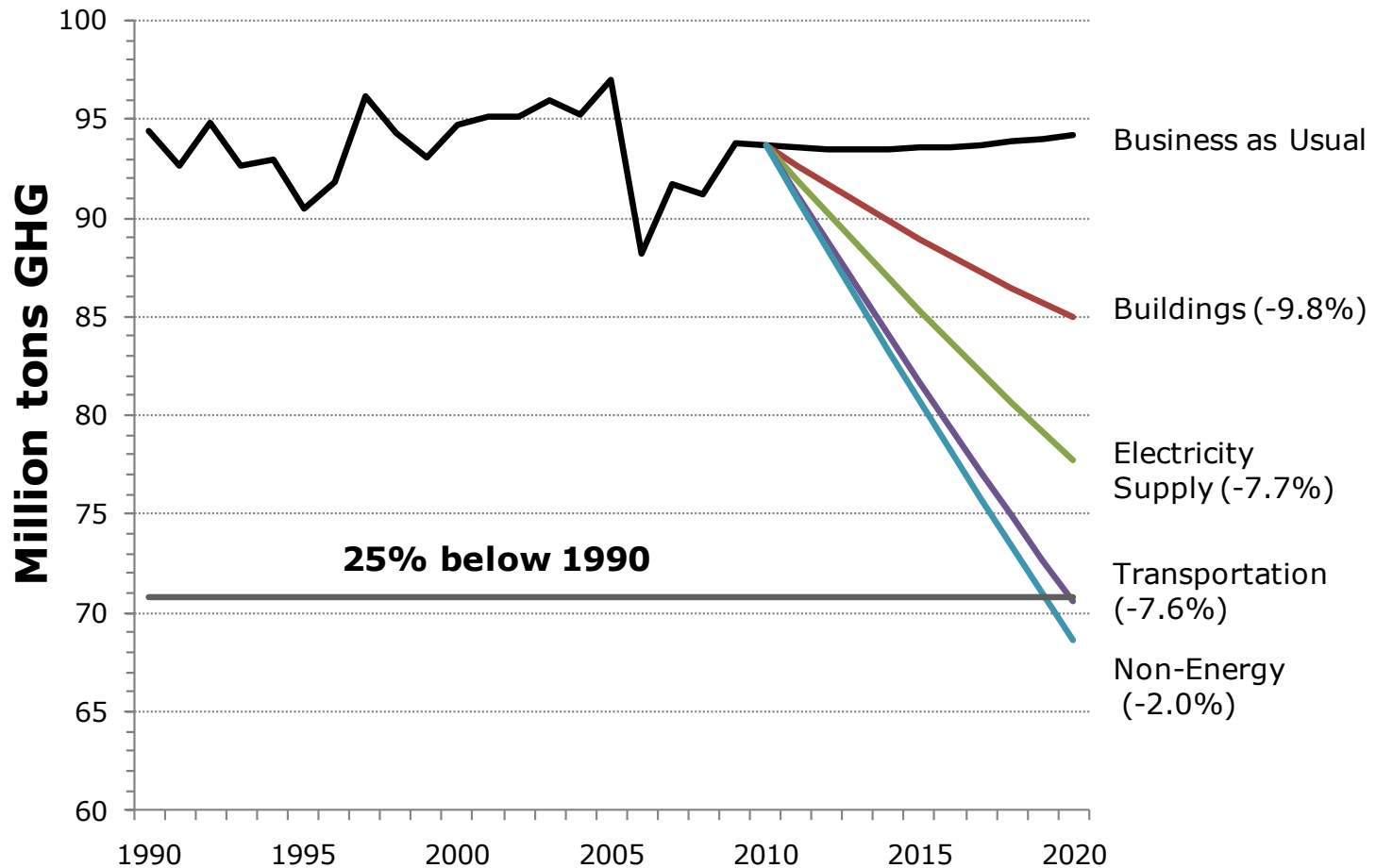


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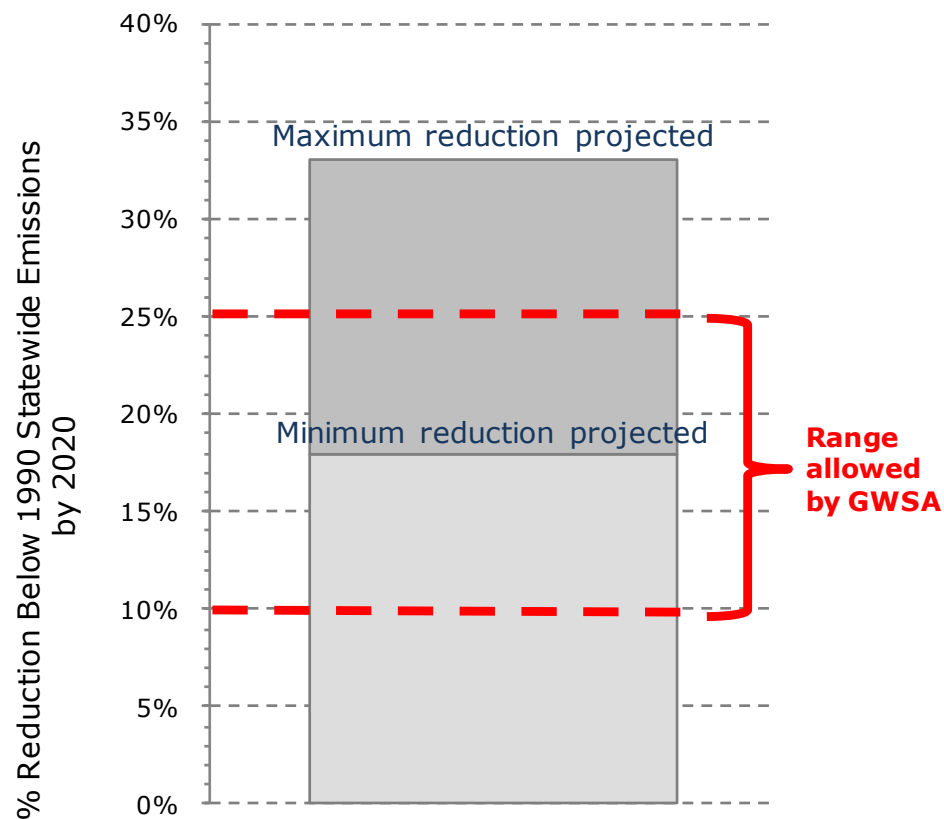


## Clean Energy and Climate Portfolio Impacts vs. Business as Usual



# Setting the Limit

## Projected Emission Reduction Range



# Putting the Plan into Action

Launch Clean Energy and Climate Advisory Committee

In 2011, state agencies responsible for each new measure will complete program development and consultative processes with stakeholders

Next four years – annual status reports to the Clean Energy and Climate Advisory Committee

Increased public, City/Town, regional groups, NGO, business community, engagement

5-year reviews



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END

